

# TREE AND SHRUB PRUNING

CONSERVATION INFORMATION SHEET - Forestry Series

660



Natural Resources Conservation Service

Michigan



*Clear-stem pruning of red oak improves sawlog quality for future wood products.*

## What Is Tree/Shrub Pruning?

All or parts of selected branches or leaders may be removed from trees or shrubs for various purposes. Some common reasons for pruning are: improve the appearance of trees or shrubs (e.g., ornamental plants and Christmas trees); improve the quality of the

stem for wood products; improve the production of nuts, fruits, boughs, and tips; reduce fire and/or safety hazards; improve the vigor of understory growth and reduce the amount of shade; and adjust the foliage and branching density for specific intents such as wind and snow control, noise abatement, access control, and visual screens.

## Pruning For Quality Sawlog Production

### Why, What, and When To Prune

- Selective pruning with subsequent thinning of crop trees under favorable growth and market conditions has been shown to be an economical venture yielding returns of up to 12 percent.
- Choose species with high commercial value such as black walnut, sugar maple, basswood, red and white oaks, black cherry, white and green ash, yellow birch, yellow poplar, and red and white pines.
- Select only single-stemmed, well-formed dominant/co-dominant future crop trees for pruning.
- Prune only the number of crop trees per acre required to provide full stocking at maturity. (Note: This may vary depending on market purpose, but for sawlogs will normally be between 40-151 trees per acre.) (See *Table 1* for Hardwoods and *Table 2* for Pines.)
- Prune only in the dormant seasons - late fall to early spring before bud break. Note: Pruning during growing seasons may increase insect and disease hazard in both pine and hardwood stands.

### Size and Height to Prune

- Pines should be at least 16 feet tall before pruning.
- Black Walnut - Begin corrective pruning at one inch or less DBH (diameter at breast height = 4 1/2 feet); remove excess limbs when trees reach 2 inches DBH.
- Other hardwoods should be at least 16 feet tall and 5 inches DBH.
- Prune at least 10 feet and up to a maximum of 18 feet.

- Do not remove more than 1/3 of the live crown or prune to more than 1/2 the tree height at one time on any tree.
- It may be necessary to prune in successive years.
- Avoid pruning limbs in excess of 2 inches in diameter if purpose is sawlog production, as wounds of greater size may take up to 10 years to heal and introduce decay into the butt log.
- Do not cut into branch collar (see Michigan NRCS Standard 660, Tree/Shrub Pruning) as wound may not heal properly, leaving opportunity for decay to enter bole.

<b>TABLE 1 - HARDWOODS</b>			
Number of Crop Trees and Growing Space Recommended for Hardwood Sawtimber Based on DBH (Diameter at Breast Height)			
DBH (in.)	No. Crop Trees (per acre)	Distance Between Trees (ft.)	Area Per Tree (sq. ft.)
5	538	8	64
6	436	10	100
7	302	12	144
8	258	13	169
9	194	15	225
10	151	17	289
11	134	18	324
12	109	20	400
13	90	22	484
14	82	23	529
15	70	25	625
16	60	27	729
17	56	28	784
18	48	30	900
19	43	32	1,024
20	40	33	1,089
21	36	35	1,225
22	32	37	1,369
23	30	38	1,444
24	27	40	1,600

<b>TABLE 2 - PINES</b>			
Number of Crop Trees and Growing Space Recommended for Pine Sawtimber Based on DBH (Diameter at Breast Height)			
DBH (in.)	No. Crop Trees (per acre)	Distance Between Trees (ft.)	Area Per Tree (sq. ft.)
5	360	11	121
6	302	12	144
7	258	13	169
8	222	14	196
9	194	15	225
10	170	16	256
11	151	17	289
12	134	18	324
13	121	19	361
14	109	20	400
15	99	21	441
16	90	22	484
17	82	23	529
18	76	24	576
19	70	25	625
20	64	26	676
21	60	27	729
22	56	28	784
23	52	29	841
24	40	30	900

### Pruning To Improve Aesthetics, Wildlife Habitat Or To Reduce Fire Hazard

Prune to:

- Expose views of valleys, hills, ponds, etc.
- Improve appearance of woodland.
- Improve views for hunting or sightseeing.
- Reduce chance of ground fire reaching tree crowns.
- Improve production of fruit for wildlife.

What and When to Prune:

- Prune any trees to achieve the desired objective.
- For fire protection in a pine plantation, remove all pruned branches from a 15-foot border around perimeter.
- Prune only in the dormant season.

- Follow guidelines in NC Regional Extension Bulletin No. 429, Renovating Old Abandoned Apple Trees for details on improving trees for wildlife fruit production.

Size and Height and When to Prune:

- Begin pruning at any height.
- Do not remove more than 1/3 of the live crown on any tree.
- Prune only during dormant seasons.

### Tools For Tree/Shrub Pruning

Use by-pass type hand pruners (*Figure 1*) to cut small branches and limbs. Anvil type pruners are not recommended as they may crush or tear plant tissue.

Use by-pass type loppers to cut medium-sized branches and small limbs (*Figure 1*).

Use a curved-blade saw 16-24 inches long with 6-8 teeth per inch to cut larger branches and limbs (*Figure 2*). An undercut should be made first when cutting limbs 4 inches or more in diameter.

Limbs larger than 4 inches in diameter are best cut with a chain saw or bow saw.

The use of paints or wound dressings is not recommended as they may prevent the wound healing normally.

Keep tools sharp. Clean and disinfect tools after each use by immersing in 70 percent denatured alcohol or a solution of 1 part household bleach to 9 parts water for 1-2 minutes after use. (Note: bleach is corrosive to metals and should be washed off with soap and water.)

### Safety Precautions

Always wear a hardhat with eye protection (*Figure 3*). Never use a pole saw or pruner near utility or power lines. Use an insured,

professional tree surgeon for work on large trees, around buildings, utility or power lines, and other obstructions.

### **Hand Tools For Pruning:**



**Figure 1 - Use hand pruners for small branches up to 3/4 inch and loppers for small limbs up to 1 1/2 inches.**



**Figure 2 - Use the pole-type pruning saw to cut limbs up to 4 inches diameter up to height of 18 feet.**



**Figure 3 - Hardhat protects against falling limbs and debris.**

### **For More Information**

Additional information on this subject may be obtained in the following references:

Manager's Handbook for Northern Hardwoods in the North Central States, General Technical Report NC-39, North Central Forest Experiment Station, USDA-Forest Service.

Improving Hardwood Timber Stands, Extension Bulletin E-1578, Russell Kidd and Mel Koelling, Department of Forestry, Michigan State University, East Lansing, MI.

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